

WHAT IS CLAIMED IS:

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1. An image forming apparatus, comprising:  
a storing unit that stores a program in  
accordance with which the image forming apparatus  
operates;

10               an acquiring unit that acquires an update  
program from an external source; and  
                  an updating unit that determines whether an  
electronic signature of the update program acquired  
by said acquiring unit is authentic and, if the  
15 electronic signature of the acquired update program  
is determined to be authentic, updates the program  
stored in said storing unit using the acquired update  
program.

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2. The image forming apparatus as claimed  
in claim 1,

25               wherein

said updating unit determines whether the electronic signature of the update program acquired by said acquiring unit is authentic by comparing a message digest generated from the update program 5 acquired by said acquiring unit and a message digest obtained by decrypting the electronic signature of the update program.

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          3. The image forming apparatus as claimed in claim 1,

          wherein

15          said updating unit updates the program stored in said storing unit with the update program acquired by said acquiring unit, and updates an electronic signature of the program stored in said storing unit with the electronic signature of the 20 update program.

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          4. The image forming apparatus as claimed

in claim 1,

wherein

said acquiring unit is an update recording medium setting unit and the external source is an  
5 update recording medium to be set in the update recording medium setting unit, the update recording medium storing the update program and the electronic signature of the update program.

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5. The image forming apparatus as claimed in claim 1,

15 wherein

said acquiring unit is a receiving unit that receives the update program and the electronic signature of the update program from the external source via a network.

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6. The image forming apparatus as claimed 25 in claim 1,

wherein

    said storing unit further comprises a recording medium setting unit and a recording medium set therein, the recording medium storing the program.

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7. The image forming apparatus as claimed  
10 in claim 1, further comprising:

    an activating unit that determines whether the electronic signature of the update program and an electronic signature of a configuration file related to the update program are authentic and, if the  
15 electronic signature of the update program and the electronic signature of the configuration file related to the update program are determined to be authentic, activates the updated program,

    wherein

20       said acquiring unit further acquires a configuration file and an electronic signature thereof from the external source; and

    said activating unit determines whether the electronic signature of the update program and the  
25 electronic signature of the configuration file are

authentic and, if the electronic signature of the update program and the electronic signature of the configuration file are determined to be authentic,  
activates the update program in accordance with the  
5 configuration file.

10                 8. The image forming apparatus as claimed  
in claim 7,

wherein

                   said activating unit determines whether the  
electronic signature of the update program is  
15 authentic by comparing a message digest generated  
from the update program and a message digest obtained  
by decrypting the electronic signature of the update  
program.

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                   9. The image forming apparatus as claimed  
in claim 7,

25                 wherein

said activating unit determines whether the electronic signature of the configuration file is authentic by comparing a message digest generated from the configuration file and a message digest 5 obtained by decrypting the electronic signature of the configuration file.

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      10. The image forming apparatus as claimed in claim 9,

      wherein

      the electronic signature of the 15 configuration file is generated by encrypting a message digest of the configuration file and identification information of the recording medium.

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      11. The image forming apparatus as claimed in claim 10,

      wherein

      25           the identification information of the

recording medium is a serial ID of the recording medium.

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12. A method of updating a program stored in a recording medium of an image forming apparatus, comprising the steps of:

10           acquiring an update program and an electronic signature thereof;  
              determining whether the acquired electronic signature of the update program is authentic; and  
              updating, if the acquired electronic  
15       signature of the acquired update program is determined to be authentic, the program stored in the recording medium using the acquired update program.

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13. The method as claimed in claim 12, the step of determining whether the acquired electronic signature of the update program is authentic further  
25       comprising the steps of:

generating a message digest from the  
acquired update program;

obtaining a message digest by decrypting  
the acquired electronic signature of the acquired  
5 update program; and

comparing the message digest generated from  
the acquired update program and the message digest  
obtained by decrypting the acquired electronic  
signature of the acquired update program.

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14. The method as claimed in claim 12,  
15 wherein

if the acquired electronic signature of the  
update program is determined to be authentic, an  
electronic signature of the program stored in the  
recording medium is updated together with the program  
20 stored in the recording medium.

25 15. The method as claimed in claim 12,

further comprising the step of:

activating, if the acquired electronic  
signature of the acquired update program and an  
acquired electronic signature of an acquired  
5 configuration file are determined to be authentic,  
the updated program in accordance with the acquired  
configuration file.

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16. An update recording medium that is  
used with the image forming apparatus as claimed in  
claim 4, the update recording medium storing the  
15 update program and the electronic signature thereof.

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17. An image forming apparatus,  
comprising:

a storing unit that stores a program in  
accordance with which the image forming apparatus  
operates;

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an acquiring unit that acquires an update

program from an external source; and

an updating unit that updates the program stored in said storing unit using the update program acquired by said acquiring unit,

5                   wherein

after updating the program stored in said storing unit, said updating unit determines whether an electronic signature of the updated program is authentic and, if the electronic signature of the 10 updated program is authentic, said updating unit maintains the updated program.

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18. The image forming apparatus as claimed in claim 17,

wherein

said updating unit determines whether the 20 electronic signature of the updated program is authentic by comparing a message digest generated from the updated program and a message digest obtained by decrypting an electronic signature of the updated program.

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19. The image forming apparatus as claimed  
5 in claim 17,

wherein

said updating unit updates the program  
stored in said storing unit with the update program  
acquired by said acquiring unit, and updates an  
10 electronic signature of the updated program stored in  
said storing unit with the electronic signature of  
the update program acquired by said acquiring unit.

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20. The image forming apparatus as claimed  
in claim 17,

wherein

20 said acquiring unit is an update recording  
medium setting unit and the external source is an  
update recording medium to be set in the update  
recording medium setting unit, the update recording  
medium storing the update program and the electronic  
25 signature of the update program.

5               21. The image forming apparatus as claimed  
in claim 17,

              wherein

              said acquiring unit is a receiving unit  
that receives the update program and the electronic  
10          signature of the update program from the external  
source via a network.

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              22. The image forming apparatus as claimed  
in claim 17,

              wherein

              said storing unit further comprises a  
20          recording medium setting unit and a recording medium  
set therein, the recording medium storing the program.

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23. The image forming apparatus as claimed in claim 17, further comprising:

an activating unit that determines whether the electronic signature of the updated program and  
5 an electronic signature of a configuration file related to the updated program are authentic and, if the electronic signature of the updated program and the electronic signature of the configuration file related to the updated program are determined to be  
10 authentic, activates the updated program,

wherein

said acquiring unit further acquires a configuration file and an electronic signature thereof from the external source; and

15 said activating unit determines whether the electronic signature of the updated program and the electronic signature of the configuration file are authentic and, if the electronic signature of the updated program and the electronic signature of the  
20 configuration file are determined to be authentic, activates the updated program in accordance with the configuration file.

24. The image forming apparatus as claimed  
in claim 23,

wherein

5           said activating unit determines whether the  
electronic signature of the updated program is  
authentic by comparing a message digest generated  
from the updated program and a message digest  
obtained by decrypting the electronic signature of  
10          the updated program.

15           25. The image forming apparatus as claimed  
in claim 23,

wherein

              said activating unit determines whether the  
electronic signature of the configuration file is  
20          authentic by comparing a message digest generated  
from the configuration file and a message digest  
obtained by decrypting the electronic signature of  
the configuration file.

26. The image forming apparatus as claimed  
in claim 25,

5           wherein

the electronic signature of the  
configuration file is generated by encrypting a  
message digest of the configuration file and  
identification information of the recording medium.

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27. The image forming apparatus as claimed  
15 in claim 26,

wherein

the identification information of the  
recording medium is a serial ID of the recording  
medium.

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28. A method of updating a program stored  
25 in a recording medium of an image forming apparatus,

comprising the steps of:

acquiring an update program from an external source;

updating the program stored in the

5 recording medium using the acquired update program;

determining whether an electronic signature of the updated program is authentic; and

maintaining, if the electronic signature of the updated program is determined to be authentic,

10 the updated program.

15           29. The method as claimed in claim 28, the step of determining whether the electronic signature of the updated program is authentic further comprising the steps of:

generating a message digest from the

20 updated program;

obtaining a message digest by decrypting the electronic signature of the updated program; and

comparing the message digest generated from the updated program and the message digest obtained

25 by decrypting the electronic signature of the updated

program.

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30. The method as claimed in claim 28,  
wherein  
an electronic signature of the program  
stored in the recording medium is updated together  
10 with the program stored in the recording medium.

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31. The method as claimed in claim 28,  
further comprising the step of:  
activating, if the acquired electronic  
signature of the updated program and an electronic  
signature of a configuration file are determined to  
20 be authentic, the updated program in accordance with  
the configuration file.

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32. An update recording medium that is used with the image forming apparatus as claimed in claim 20, the update recording medium storing the update program and the electronic signature thereof.

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